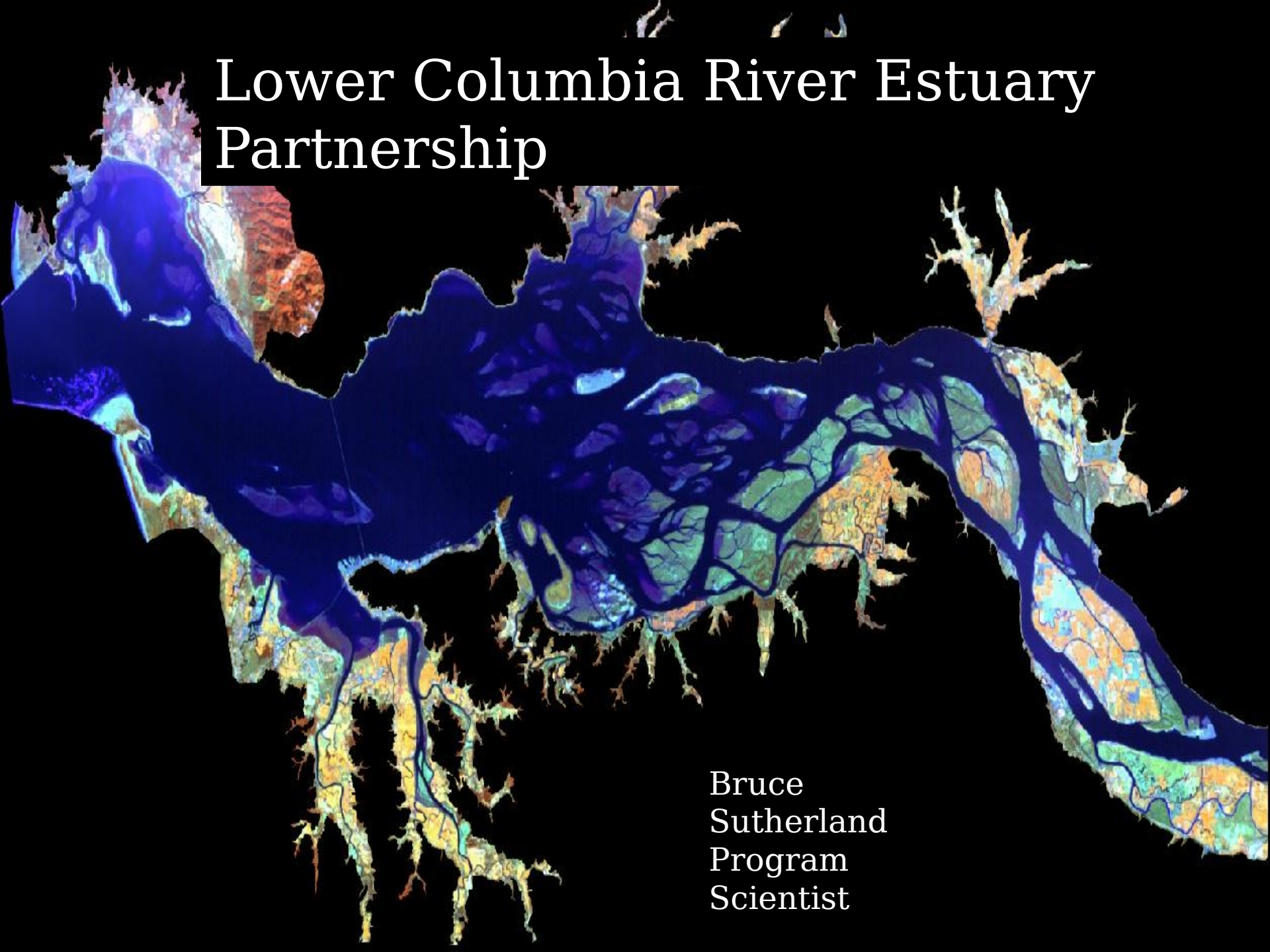
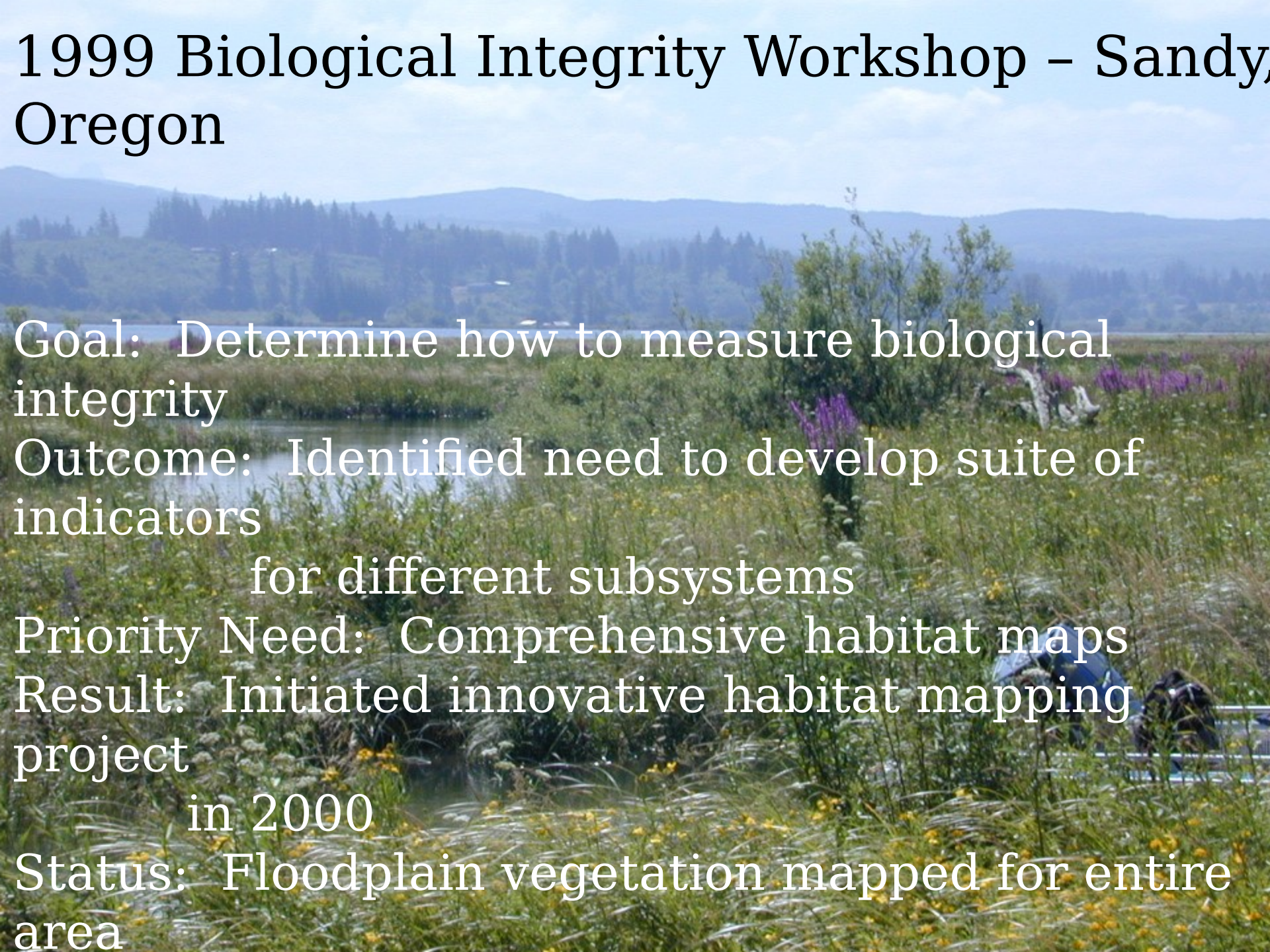
Lower Columbia River Estuary Partnership



Bruce Sutherland
Program Scientist

1999 Biological Integrity Workshop – Sandy, Oregon



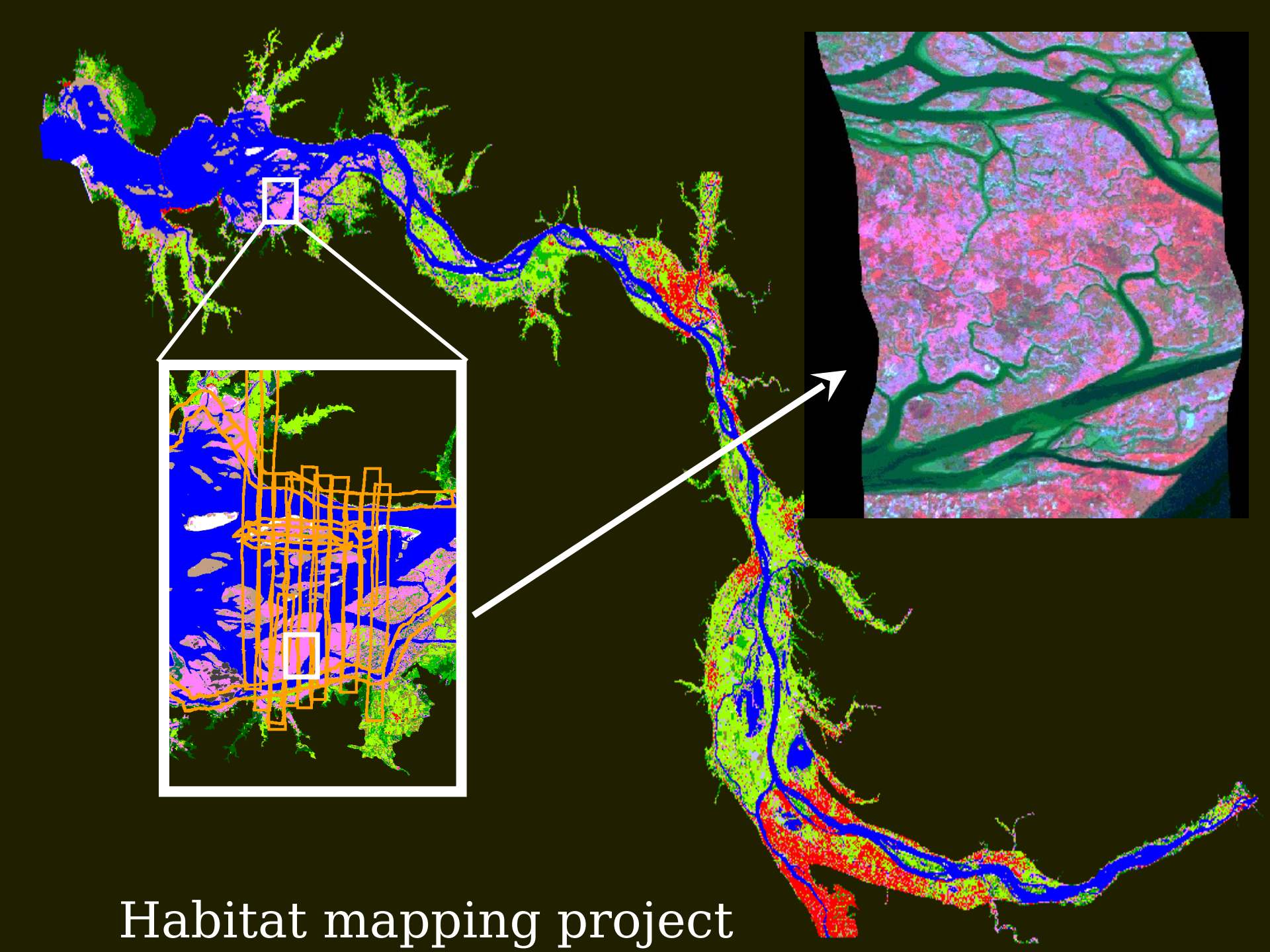
Goal: Determine how to measure biological integrity

Outcome: Identified need to develop suite of indicators for different subsystems

Priority Need: Comprehensive habitat maps

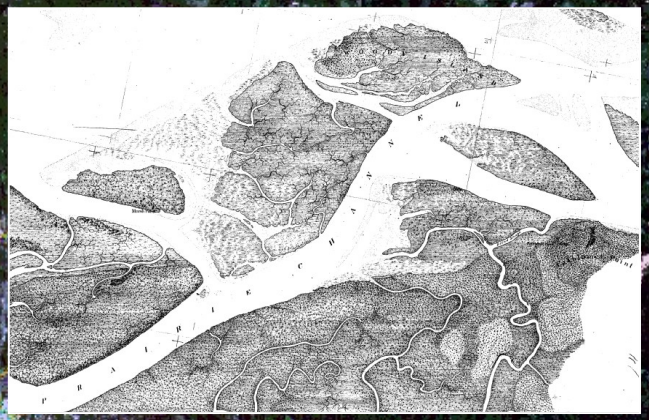
Result: Initiated innovative habitat mapping project in 2000

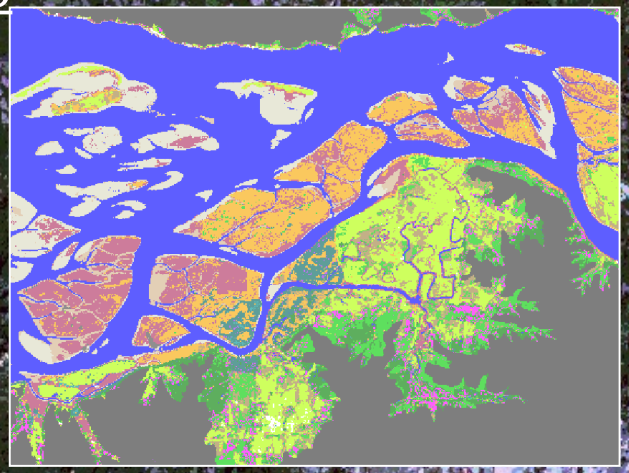
Status: Floodplain vegetation mapped for entire area



Habitat mapping project

Kinds of Uses
-landscape analysis
-historic change





2001 Habitat Conservation and Restoration Workshop
Astoria, Oregon

Goal: Develop science based habitat restoration criteria

Result: Reached agreement on set of 6 criteria for evaluating and prioritizing habitat conservation and restoration projects

Status: Process in place through the Science

2003 Research Needs Identification Work Sh
Portland

Goal: Review current knowledge, identify informat
and
determine what else we need to know to effectivel
salmon recovery and ecosystem conservation and

MONITORING AND RESEARCH NEEDS

- Bi State Water Quality Study
- Public private partnership to study lower river and estuary and assess its health
- 1990-1991: Gather and assess existing data
- 1991-1993: Reconnaissance Surveys
- 1993-1996: Baseline Studies
- 1995-1996: Advanced Studies
- 50 Technical reports that provide compendium of information on the health of the river

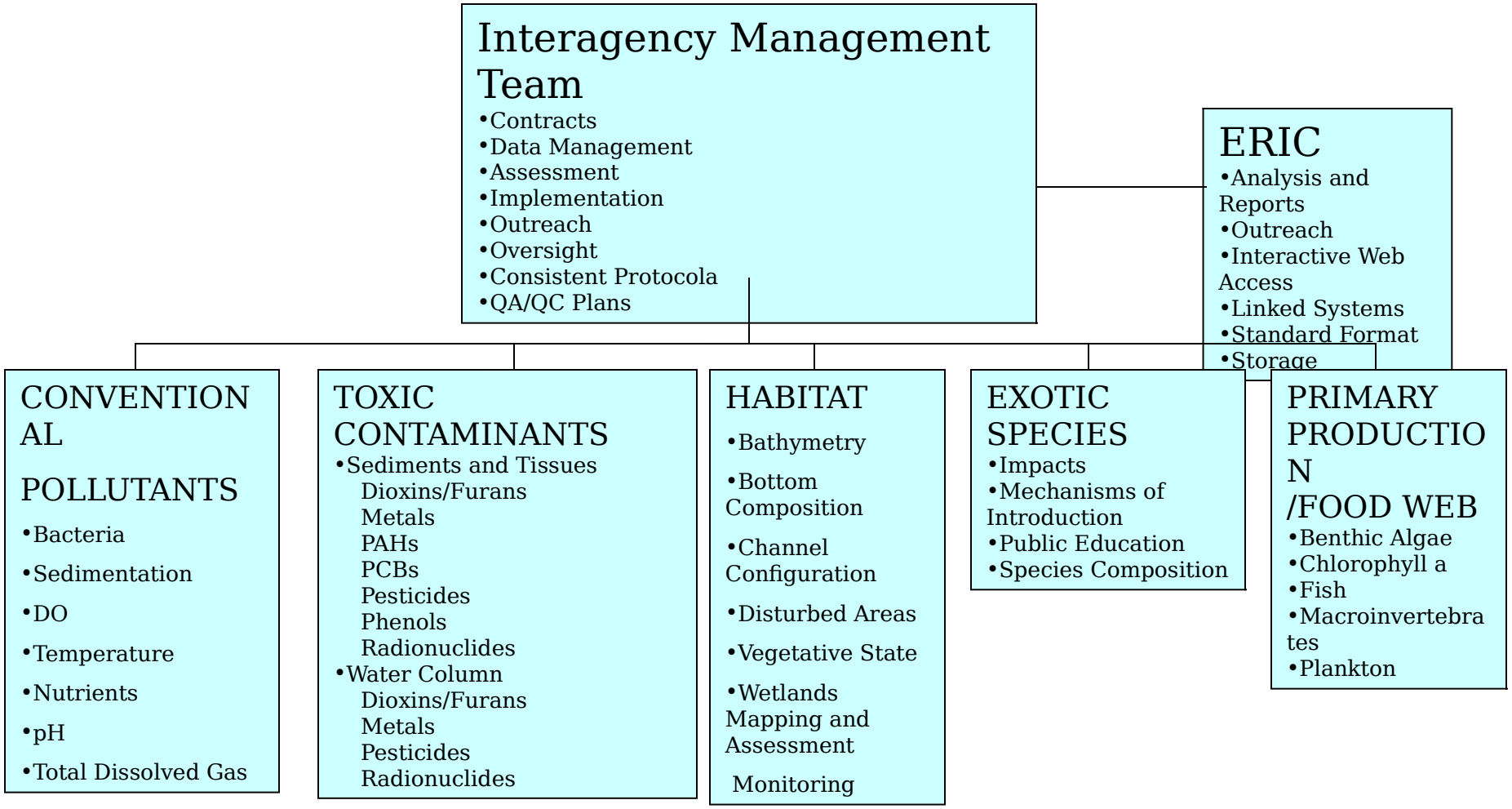
PROBLEM AREAS

- Toxic contaminants in sediments and fish tissues
- Habitat loss or modification
- Water quality problems that affect beneficial uses
- Overall declines in fish and wildlife health
- Critical lack of basic data
- Need to evaluate river condition over time

LONG TERM MONITORING AND DATA MANAGEMENT

- Established expert work group led by USGS
- Two years developing long term monitoring plan
- Developed comprehensive approach to ecosystem monitoring
- Aquatic Ecosystem Monitoring Strategy
- Data Management Strategy

LOWER COLUMBIA RIVER LONG TERM MONITORING



CONVENTIONAL POLLUTANTS

- Continue existing ambient monitoring programs
- Expand number of sites and parameters sampled to provide more coverage
- Develop TMDLs for temperature and total dissolved gas and implement management plan
- Develop consistent bacterial standards
- Conduct site specific surveys to help pinpoint possible DO, pH, and bacterial

TOXIC CONTAMINANTS

- Expand ambient monitoring to include key toxic contaminants
- Establish baseline sampling network for monitoring toxics in the sediments
- Establish a random site network for monitoring toxics in fish tissue
- Conduct a special study to identify and monitor hot spots and sources of contamination
- Conduct study to identify trends in sediments using cores
- Evaluate trends in toxics in fish tissue on

EXOTIC SPECIES

- Conduct inventory of invasive species
- Evaluate impacts to ecosystem
- Monitor mechanisms of introduction
- Implement long term monitoring

HABITAT

- Inventory habitat using satellite imagery, high resolution hyperspectral imagery and videography
- Develop habitat monitoring protocols and implement habitat monitoring program
- Conduct system wide mapping of bathymetry
- Reconstruct historical habitat and landscape patterns

PRIMARY PRODUCTION / FOOD WEB

- Expand monitoring programs to include primary productivity measures
- Develop index of biological integrity for macroinvertebrates
- Conduct an assessment of food webs from benthic invertebrates through fish
- Develop a model of primary productivity

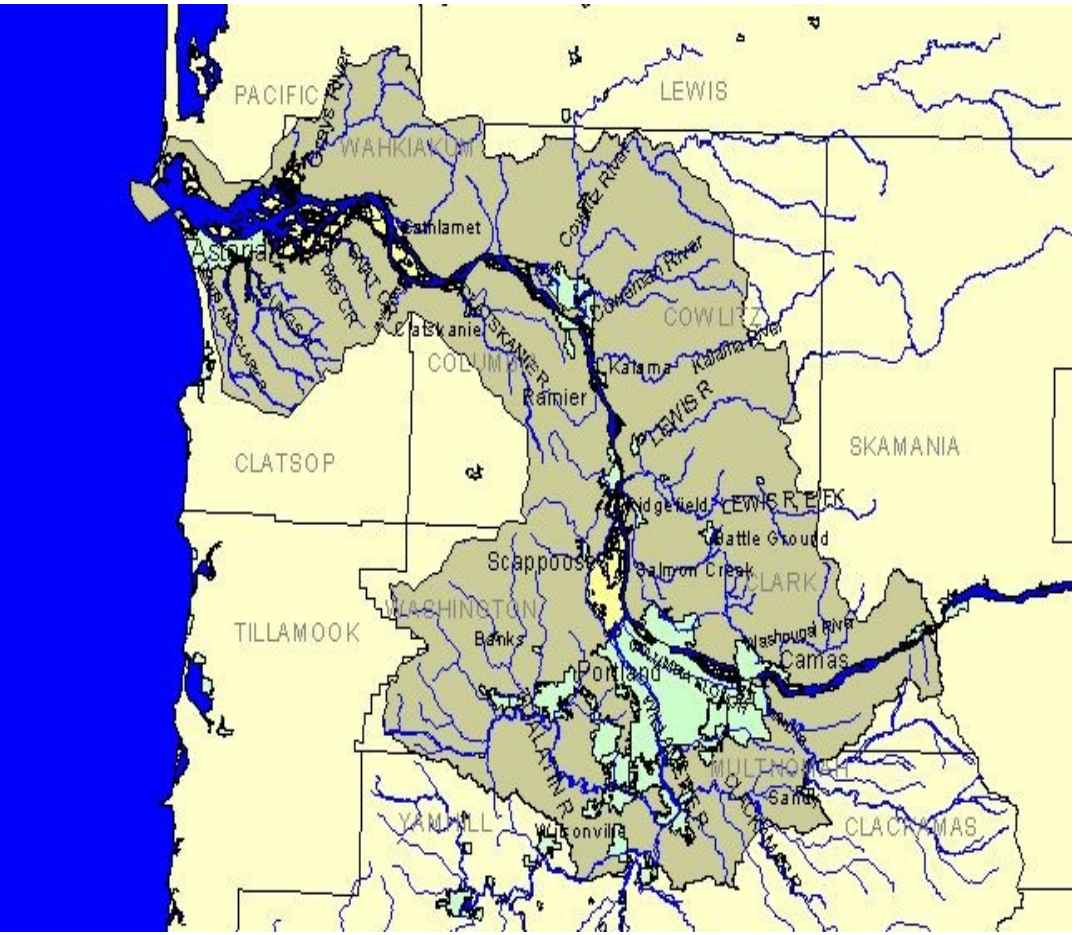
DATA MANAGEMENT

- ERIC
  - Analysis and Reports
  - Outreach
  - Interactive Web Access
  - Linked Systems
  - Standard Format
  - Storage

NEEDS SUMMARY

- A common data management system
- Agreed upon indices of biological integrity
- Routine monitoring of primary productivity
- Impacts of invasive species
- Agreed upon habitat monitoring protocols
- System wide bathymetry
- Baseline toxic contaminant monitoring
- Trends in toxic contaminant uptake in fish
- Impacts of contaminant exposure
- Expanded ambient monitoring

WHERE ARE WE?



- Making progress
- Commitment and impetus
- Extensive work underway
- Complicated puzzle taking shape
- Some pieces still missing
- Not sure what final picture will look like